

REMARKS/ARGUMENTS

Re-examination and favorable reconsideration in light of the above amendments and the following comments are respectfully requested.

Claims 1 - 42 are pending in the application. Currently, no claim has been allowed.

By the present amendment, claims 1, 19, 31, and 42 have been amended; claims 18, 28, 32, and 41 have been cancelled; and new claims 43 - 45 have been added to the application.

Applicants hereby note the objection to the drawing box which was checked in the office action. However, Applicants believe that the box was inadvertently checked since the Examiner has given no reason why the drawings are objectionable.

In the office action mailed August 9, 2005, claims 1 - 9, 12 - 27, 30 - 39 and 42 were rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent No. 6,720,519 to Liu et al.; and claims 10, 11, 28, 29, 40, and 41 were rejected under 35 U.S.C. 103(a) as being unpatentable over Liu et al. in view of U.S. Patent No. 6,621,045 to Liu et al.

The present invention relates to a laser drilling apparatus which comprises means for emitting a plurality of laser pulses, means for deflecting the plurality of laser pulses at a part, means for positioning the part for receiving the plurality of laser pulses, and computer means for controlling operation of the deflection means and for orienting the positioning means to drill a shaped hole in the part. In a preferred embodiment, the laser drilling apparatus also has means for providing a diagnostic feedback to the computer on at least one of the laser pulses. The diagnostic feedback providing means may be selected from the group consisting of a CCD camera, a photo-diode, an autocorrelator, a power meter, and a quad cell detector.

The present invention also relates to a method for laser drilling holes in a turbine engine component which comprises the steps of emitting a plurality of laser pulses from a laser, deflecting the plurality of laser pulses off of a scanning device and emitting the plurality of laser pulses, utilizing a part holder within a part chamber to position the turbine engine component to be drilled such that the turbine engine component receives the plurality of laser pulses deflected off of the scanning device, maintaining the part chamber at a pressure no greater than 20 mTorr, and controlling operation of the scanning device and movement and orientation of the part holder with a computer control.

Claim 1 as amended herein is allowable because Liu et al. '519 does not teach or suggest the claimed means for providing a diagnostic feedback to the computer means on at least one of the laser pulses, which diagnostic feedback providing means is selected from the claimed group of a CCD camera, a photo-diode, an autocorrelator, a power meter, and a quad cell detector.

Claim 19 as amended herein is allowable because Liu et al. '519 does not teach or suggest a part chamber which contains the part to be drilled and/or a part chamber having an atmosphere at a pressure no greater than 20 mTorr. There is no part chamber in either of the Liu et al. patents.

Claim 31 is allowable because Liu et al. '519 does not teach or suggest drilling holes in a turbine engine component. Nor does Liu et al. '519 teach or suggest utilizing a part holder within a part chamber to position a turbine engine component to be drilled and maintaining the part chamber at a pressure no greater than 20 mTorr during the laser drilling. The claimed pressure is significant in that it creates a favorable

environment suitable for drilling. Liu et al. '519 does not recognize this.

The Liu et al. '045 patent does not cure the aforesaid deficiencies of the Liu et al. '519 patent.

Claims 2 - 17, 20 - 27, 29, 30, 33 - 40 and 42 are allowable for the same reasons as their parent claims as well as on their own accord.

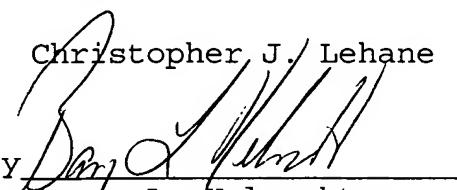
New claims 43 - 45 are allowable for the same reasons as their parent claims as well as on their own accord.

For the foregoing reasons, the instant application is in condition for allowance. Such allowance is respectfully solicited.

Should the Examiner believe an additional amendment is needed to place the case in condition for allowance, the Examiner is hereby invited to contact Applicants' attorney at the telephone number listed below.

No fee is believed to be due as a result of this response. Should the Director determine that a fee is due, he is hereby authorized to charge said fee to Deposit Account No. 21-0279.

Respectfully submitted,

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I, Nicole Motzer, hereby certify that this correspondence is being deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to: "Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313" on November 7, 2005.

